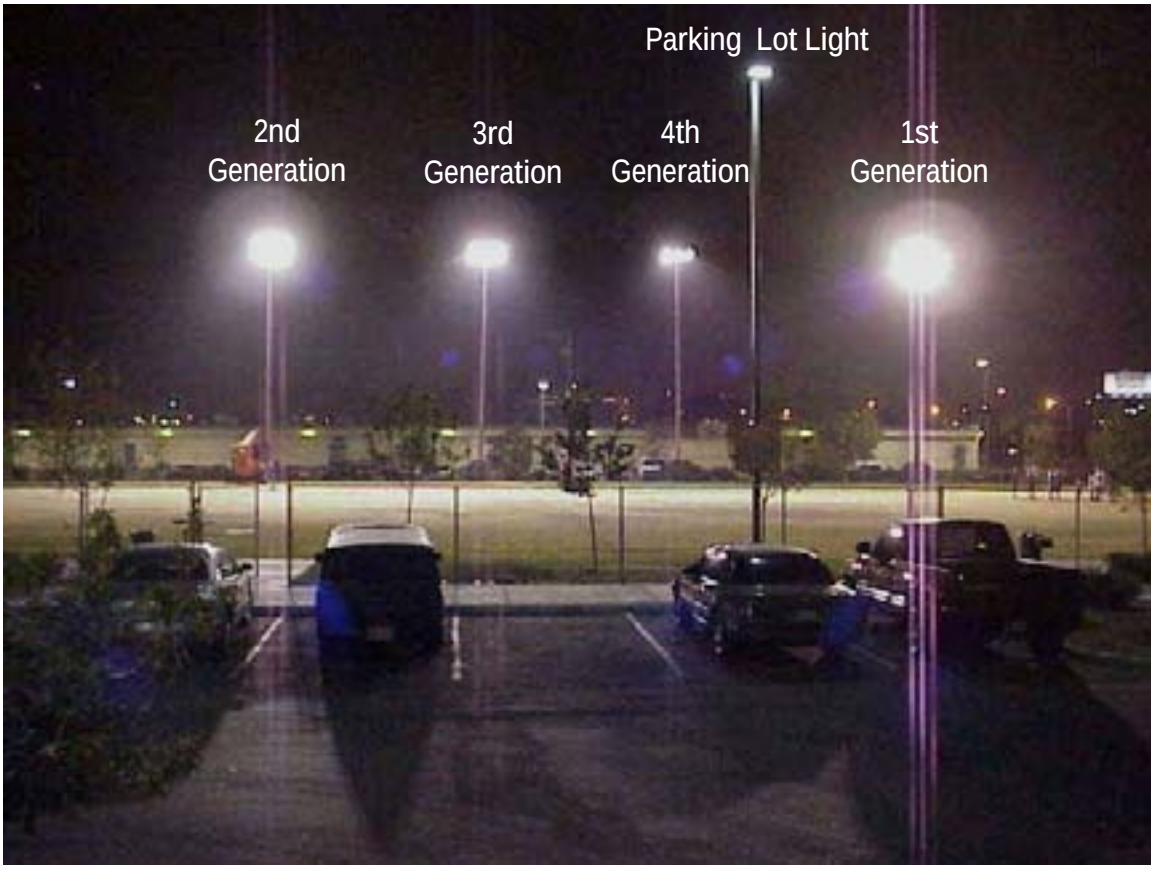
Understanding Glare, Not All Sports Lighting Fixtures Are Created Equal



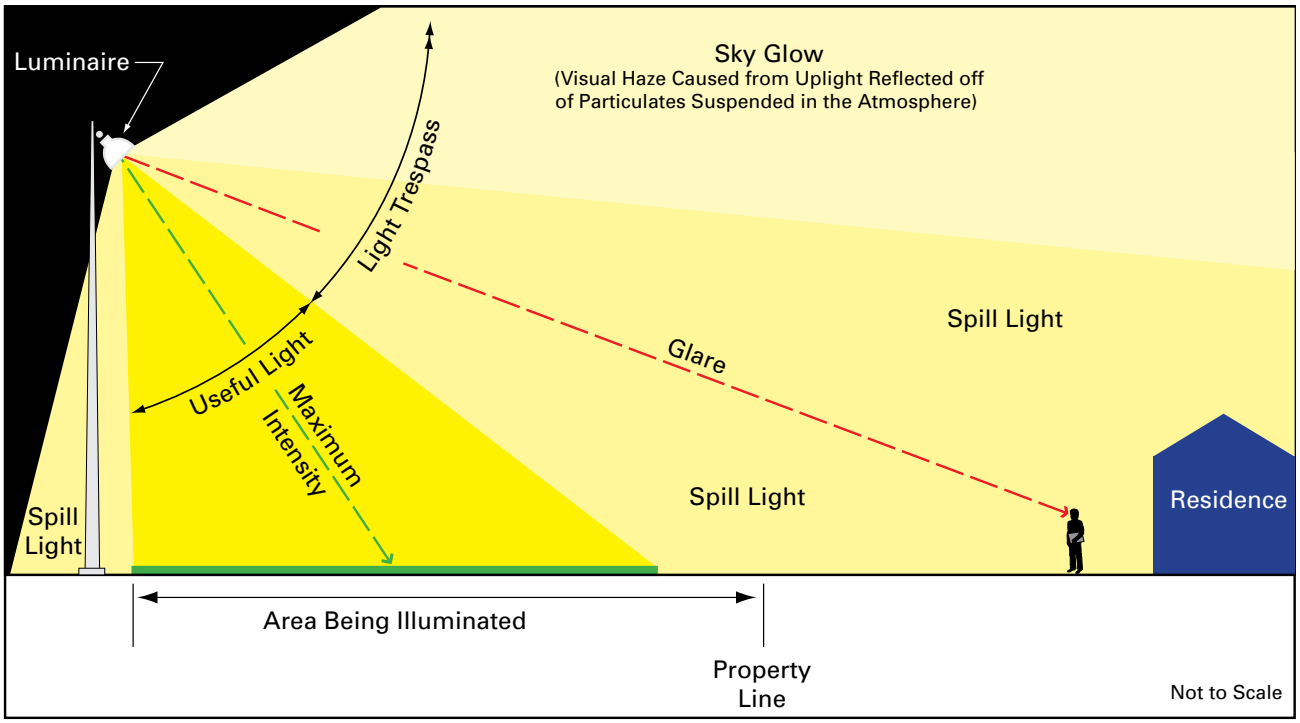
This digital photo shows four different sports lighting fixtures aimed at same point on the field, demonstrating differences in the control of glare.

Aiming, wattage, supply voltage and other aspects of the demonstration were verified by a DMD staff member to ensure an honest comparison. All of these fixtures are currently available and installed on sports fields.

Note the glare produced as captured by the photo and the level of development for each fixture as described below (the unlabled light in the foreground is a low wattage parking lot light).

Understanding Obtrusive Light Terminology

The three components of obtrusive light include glare, spill light and sky glow. In a lighting design each obtrusive light component is considered separately.



Glare. Obtrusive light that hinders or bothers the human eye. Glare is the result of light emitted from a source that is in sharp contrast to its surroundings.

> ***Disability Glare.*** The presence of an amount of glare so significant as to prevent adequate vision. The presence of disability glare means that other objects in one's field of vision are obscured.
>
> ***Discomfort Glare.*** The presence of a sufficient amount of glare to cause discomfort. While the individual may experience a sense of discomfort, this level of glare does not obscure his or her vision.
>
> ***Nuisance Glare.*** The presence of a sufficient amount of glare as to be bothersome but does not prevent vision or lead to discomfort.

Spill Light. Illuminance falling beyond the area being illuminated. Sampling spill light with a calibrated light meter is the only accepted method of measuring and defining levels of light trespass for any community, and is quantifiable.

Sky Glow. The visible haze or glow of light seen above a lighting installation that reduces the ability to view the darkened nighttime sky. The source of sky glow is a combination of light emitted upwards from a light source and reflected light cast upwards from the surface being illuminated reflecting off particles suspended in the atmosphere.

Note: Glare, spill light and sky glow impacts are only present when an outdoor facility is illuminated at night. Once the lighting is turned off, the impacts of obtrusive light are no longer present.

Understanding Typical Lighting Levels

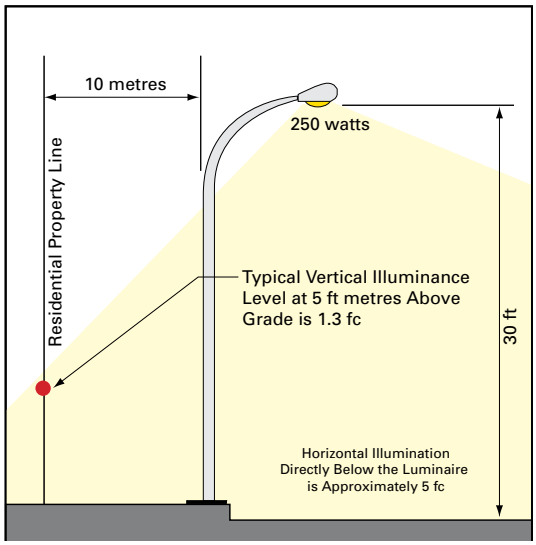
The eye adapts to different light levels making it possible to see in a wide range of illuminated conditions

Description	Lux Levels
Sunny Day Outdoors	5,000 fc
Overcast Day	500 fc
Illuminated College Football Stadium Lighted for TV	150 fc
Illuminated Baseball/Soccer Field	20 to 30 fc
Typical Street Lighting (Measured directly under luminaire)	4 to 5 fc
Moonlight Falling on a Surface	0.1 fc

Loyal Heights Field Lighting

Note: 1.1 fc is the maximum recommended allowable by City Ballfield Lighting Standards.

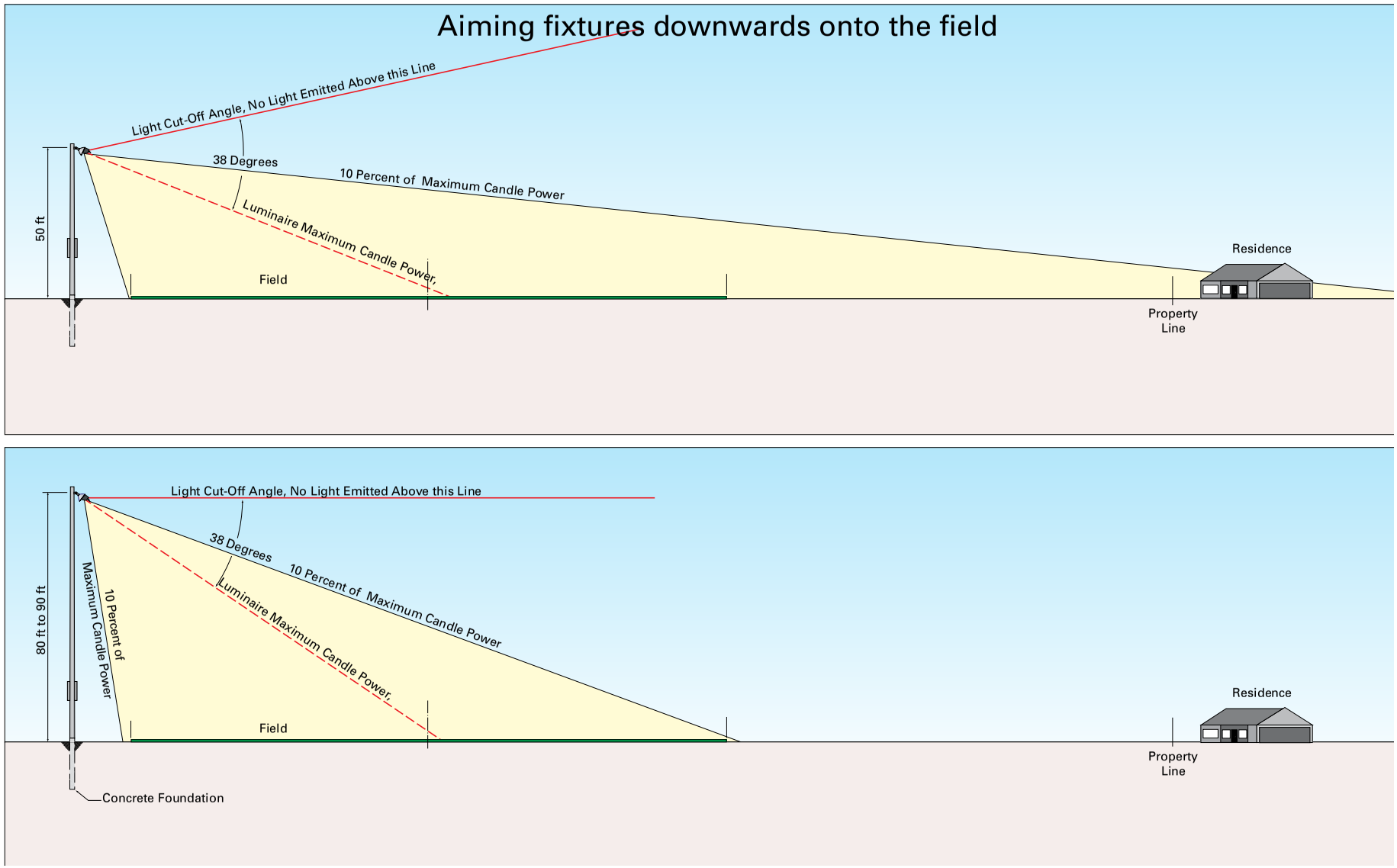
Urban soccer field with spill and glare control fixtures illuminated to 30 fc. Photo taken approximately 150 ft from the edge of the field.



Vertical spill light from a typical street light

How Pole Height Assists In Controlling Obtrusive Light Impacts

Taller poles typically reduce impacts off site, including spill light, glare and sky glow.



Typical Shielded Sports Lighting Fixtures